

## Curt Moore

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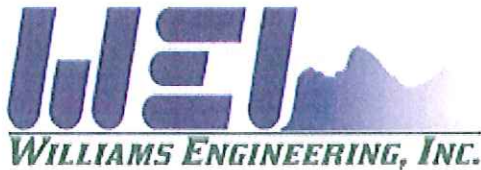
**From:** Gerald Williams [gwilliams@grwei.com]  
**Sent:** Tuesday, March 08, 2011 3:12 PM  
**To:** aweng@silverstar.com; seanmoulton@tetonvalleylaw.com  
**Cc:** Angie Rutherford; Curt Moore; Louis Simonet  
**Subject:** Heritage Peaks

This email summarizes the conversation I just had with Arnold Woolstenhulme regarding my earlier 3/8/2011 review comments on the subject project.

- There are places where having the access road 1 foot below the base flood elevation (BFE) would require excavation into the natural terrain. This is not only not necessary but not desired. Consequently, the wording should be revised to have the top of access road in the floodplain be "1 foot below the BFE or at natural grade, whichever is higher;" and
- Where the access road ties in to the County 200 West Road, 200 West itself is more than 1 foot below the BFE. Consequently, the access road will have to ramp down to the 200 West at a depth greater than 1 foot below the BFE. But it should not dip below the County road level. A culvert under the access road can convey normal surface runoff under the access road to the creek.

These comments modify but do not replace those sent out earlier today.

Gerald R. Williams, P.E., President  
CFM, CPESC, CPSWQ,



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## **Floodplain Review Comments**

On the

### **HERITAGE PEAKS SUBDIVISION**

**By Gerald R. Williams, P.E., CFM**  
**Teton County Floodplain Administrator**

Comments below in black text are dated 2/3/2011, and pertain to the report dated 1/18/2011.

Comments below in red text are dated 3/1/2011, and pertain to the report dated 2/16/2011.

Comments below in blue text are dated 3/8/2011, and pertain to the 3/7/2011 submittal.

Curt Moore sent to me a memorandum dated November 5, 2010 with a number of general floodplain management questions, Heritage Peaks Subdivision being the underlying purpose of the questions. I responded with answers in a November 11, 2010 letter (Letter) which I presume the applicant received a copy of, but it is submitted attached for convenience as I will reference it.

As per Letter answer #3, detailed methods must be used to establish the 100 year (1% annual chance flood) flow rates and base flood elevations (BFEs). We presume the report sealed 1/18/2011 is in response to the Letter.

I probably should clarify Letter #5 and provide updated thoughts. There are two courses of action. One is for the applicant to prepare a full fledged LOMR application (FEMA forms and very formalized documentation of hydrology and hydraulics), and submit for having the mapping changed through the subject property. A second approach is simply to show, using detailed methods, that the proposed building envelopes really are outside of the 100 year floodplain. I can approve that, and it would not be submitted to FEMA as a LOMR or to request any mapping change. This second approach would probably suit your purposes, would be a lot easier and quicker for you to address requirements, and is the approach I assume you are choosing. However, even with this second approach, the County must have sufficient analysis and documentation, acceptable to FEMA, for the County to approve any application, and to have it on file in case of an audit or other needs. Review comments that follow are based on the assumption that you are pursuing the second approach above rather than a mapping change. Because of limited data for review, future reviews may include new comments.

1. **Hydrology** Two methods are presented in the report for estimating the 100 year runoff. The first is the Rational Method, presented in the report on page 4 and page 5 paragraph 3. However, for a watershed as large as the one involved with this stream, it is doubtful that FEMA would accept the Rational Method, and for various reasons the County will not accept it. The second method used, as described on page 5 paragraph 3, is a procedure typically used for reality checks, but given the nature of this project *and the relatively large size* of the drainage area, it would be acceptable for a local drainage report; that is, a drainage report necessary only to satisfy local requirements. The method estimates watershed runoff based on runoff per square mile that has been estimated using more detailed methods





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in nearby watersheds. Using this procedure, a runoff rate of 1550 cfs was obtained. The described curve was not in the report, but in the past I too have prepared a similar chart of runoff curves plotting FEMA FIS, NRCS floodplain, and WEI floodplain values for the region based on runoff per square mile, the rate decreasing the larger the runoff area. Using Teton County FEMA FIS values, which seem appropriate compared to all the others plotted, at the size of 28.4 square miles for the watershed as per the Report, the value is approximately 54 cfs per square mile, or 1534 cfs, similar to what was presented. Consequently, I could accept the 1550 cfs were it not something that involves a FEMA map and NFIP regulations that must be documented with FEMA acceptable methods. And FEMA will not accept this method.

All discussion related to the Rational Method should be removed from the report. **Not addressed—it still appears on page 4. Addressed.** Although FEMA will not accept the similar runoff per square mile method, if desired, results could be discussed in the report and the curve provided, if presented only as a “reality” check. Only FEMA accepted methods can be used as the basis for establishing the hydrology. **Not addressed. The 1550 cfs using comparative values was still presented in the report as the value to use, and was the value used in the HEC-RAS model for all cross sections except for the upper two, for which only 1500 cfs was used. Addressed.**

Although it is not necessarily more accurate, a hydrological option that is just as simple to use and which FEMA typically will accept, and therefore the County will accept it, is a USGS regression analysis. **The report states on page 3, 3<sup>rd</sup> paragraph, that WEI recommended this method, whereas instead we only mentioned it as a simple option available for use, and though it may not be more accurate, as stated in the preceding sentence, it nonetheless is FEMA approved. The latest report presents use of the USGS regression method and then does not use the results, but instead tries to justify previous results (see page 3 paragraph 4 and top of page 4) and then uses the previous 1550 cfs based on the comparative method that is not accepted by FEMA. This is not acceptable. Use the 1580 (if South Leigh Creek overflows are not a factor—see redlined comments in #8 hereafter) in the HEC-RAS model, at all cross sections, and thus be conforming to FEMA requirements and previous comments (and I think you will also find that the extra 30 cfs does nothing to adversely affect the results). Also, there should be a page after C-2 that presents the 100 year flow, just as page I-2 does for South Leigh Creek. Addressed.** There are manual procedures and DOS programming methods to use to perform the regression analysis to obtain flows, but the easiest is to use the online USGS's StreamStats program available at: <http://water.usgs.gov/osw/streamstats/idaho.html>. If it doesn't go directly to Idaho as it ought, select Idaho. Then click on the Interactive Map, zoom in by one of several means, select the Watershed Delineation from a Point a button and click the map at the stream and 2000 West Roadway, and it will draw your watershed and provide information regarding it (it says the watershed is 36.2 square miles rather than 28.4). Make sure your browser will allow pop-ups for this site, then click on the Estimate Peak Flows using Regression Analysis button and peak flows are calculated, including a 100 year flow rate of 1580 cfs. It is really that fast and that simple. It provides the watershed map, data, and answer, report ready. You certainly can use other FEMA accepted methods—I only mention this as a simple option if you are not already aware of it, but whatever you use, it must be FEMA acceptable and *fully* documented in the report.





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2. **Roads and Bridges** Per Letter answer #4, detailed methods may, as appropriate, include simple normal depth flow calculations. However, also as per Letter #4, they would not be acceptable in this application because of the immediately downstream constriction of County Road 2000 West and a bridge, which would most likely cause backwater conditions for a distance upstream that must be considered in the evaluation. Therefore, we indicated in Letter #4 that FEMA accepted modeling software and practices must be used to evaluate the BFEs. HEC-RAS modeling software was referenced in the Report, but no electronic file was submitted for review, but even so, from the table on Report page C-1 and the Flood Plain Study map cross sections (page A-1), it is apparent that the model did not include crossing roads or bridges, and is therefore not evaluating any backwater condition from them. This would not be acceptable to FEMA and is not acceptable to the County. Proper HEC-RAS procedures for evaluating bridge flows must be used, which involves 4 cross sections with specific locations and conditions for each bridge. This must be used on County Road 2000 West to properly identify the backwater condition onto the site. **The 200 West bridge was modeled, but there are problems. First, the contraction and expansion coefficients typically used for channels of 0.1 and 0.3, respectively, were used through the bridge section where values more in the range of 0.3 and 0.5, respectively, should be used. I saw nothing in the data that would justify the lower values used. Secondly, it appears that the upper bridge section data was simply copied as the lower bridge section data, which if conditions were similar, the channel crossing not at a skew, and the starting location of the cross section stationing were the same, this would be okay. However, section 1.66 (the downstream section) starts approximately 400 feet north of the location where section 1.68 (the upstream section) starts, and so the downstream bridge opening is 400 feet north of the downstream channel location and the upstream bridge location. This offset has "wiggled out" the program and results, it showing only 73 CFS passing through the bridge and no flow over the road, even though there is 1550 CFS in the model. Also, sections 1.66 and 1.68 should be at the toe of road embankment slope, which is consistent with the cross section label, but looking at the profiles, the "toe of slope" profiles is about the same as the roadway elevation, which does not seem likely, and also would not be consistent with the 60 foot width between these sections that to be down the embankment slope from a 30 foot wide bridge. See also black and redlined text in Comment #5 regarding the southern limit of flood conveyance. These issues need to be corrected. Addressed.** The bridge on Hwy 33 must also be evaluated to determine the flow characteristics coming onto the site, verifying the flow rate, flow velocity, and even more importantly, that it all arrives through the bridge opening and none from weir overflow of the road that could potentially widen the floodplain on the site. **Not addressed.** However, if the flow overtops Highway 33, it would head southwest, which would impact the north side of the site from what is modeled in HEC-RAS, which side, as discussed in the 3<sup>rd</sup> red text sentence in Comment 6 below, may not be an issue, in which case **WITH EXPLANATION** in the report, the Highway 33 bridge modeling can be skipped. **Addressed.** The model must be FEMA worthy and acceptable.
3. **Report discussions and conclusions** regarding flow velocities and capacities of the channel, overbanks, and bridges should be based on model results and nothing else. **Not addressed.** Page 3 paragraph 5 and page 4 still present velocity and flow rate information that is not at all supported by documentation, and which is also contrary to the HEC-RAS results. Also, the 200 West bridge width in the narrative is 30 feet but the HEC-RAS model has it only 24 feet, and the narrative has the height at 6 feet and the HEC-RAS model has it at 4.8 feet. The information needs to be consistent and





correct. Addressed.

4. **Page A-1 Floodplain Limit Plotting** Once the HEC-RAS model is revised to include the roads and bridges, the water surface elevations will likely be different. However, it may be well to note now that the water surface elevation calculated is the point on the ground where the edge of the floodplain is, but that is not how the map is currently drawn. The edge of the floodplain will, to some extent parallel the contours except that the water surface elevation will be decreasing in the downstream direction. The floodplain delineation thus will not necessarily be a smooth curve more or less paralleling the river channel. For example, at cross section 1.83 (which is not labeled but should be addressed), the WSE was calculated as 6102.2, but the floodplain limit is plotted approximately 85 feet away at elevation 6103.9 +/- . At cross section 1.85, the WSE was calculated as 6103.8, but the floodplain limit is plotted approximately 85 feet away at elevation 6105, and the limit crosses that contour several times. Between cross sections 1.70 and 1.75, nearly all the ground on the site south of the stream is below the calculated flood level, but the plotted floodplain limit shows it not being in the floodplain. Again, where the calculated and interpolated floodplain elevations match the terrain is where the limit is, and that likely will not result in a smooth floodplain curve following the stream. Partially addressed. The south limit is better (section 1.85 is off approximately 30 feet). The north side has no limit shown, but I suppose where the only intent of this is to determine whether southern portions of the site are in or out of the floodplain, then only the south limit need be shown. Addressed.
5. **Data Containment of Flows** Be sure to provide base mapping that shows by contours full containment of the river flows (right now it does not as noted in (4) above), AND the HEC-RAS cross sections (graphics and data input) MUST extend at least as far out as the calculated flow. Not addressed. From 200 West to east of section 1.75, there is still no boundary to the south, which is a modeling problem. The terrain does not bound the flows. HEC-RAS cross sections had ground elevations extended vertically to bound the flows on all non-bridge sections starting at section 1.75 and downstream. If the ground never rises to bound the flows, and you think there is justification for using an imaginary boundary, such as midway between Spring Creek and South Leigh Creek, then explain and justify the situation, and show the streams and dividing point on a map to clarify the discussion. Addressed.
6. **Cross Section Alignments** These are to be perpendicular to the flow. Consequently, where crossing the channel, they should be perpendicular to the channel. In the overbanks, they generally are perpendicular to the overall main channel flow direction, somewhat as shown. However, cross section 1.75 has weird bends, and cross section 1.85 heads due north from the channel and even crosses section 1.91, which cannot happen. Instead, it should head north northwest more perpendicular to the overall overbank flow direction. Flow distances between cross sections that are used in the model should be adjusted to be the modified distances between cross sections, channel lengths following the meandering channel, and overbank lengths being more the overland "as the crow flies" lengths approximately at the centroid of overbank flow. Addressed.
7. **Page C-1** Provide an exhibit of the full limits of the watershed area and not truncated. If you use StreamStats, it will provide the needed exhibit. Addressed.





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8. **South Leigh Creek** All information presented in the report pertains to Spring Creek. No mention was made in the report of South Leigh Creek (an overflow channel therefrom) that is discussed in the wetlands report prepared by Lone Goose Environmental as intersecting the property and joining Spring Creek. The map on page A-1 shows AW Engineering computed 100 year floodplain delineation heading southwest just east of the proposed House Site 1. I suspect this may be the other creek coming in. If there is another creek on the site as mentioned, it must be properly contoured on the map AND evaluated hydrologically and hydraulically the same as for Spring Creek, using a confluence in the HEC-RAS model. Lone Goose Environmental (LGE) discusses this on page 1 Section II first paragraph of their May 12, 2004 report. Viewing the aerial and the AW furnished contouring, the LGE discussion does not seem correct. However, the AW report does not clarify the matter much in its page 4 last two paragraphs, where it is mentioned that the hydrological evaluation of flow rates "did not show any influence upon Spring Creek or on the said project property." Of course an estimated flow rate will not show influence, there has to be a hydraulic analysis or evaluation to determine that. LGE indicates that there is an overflow channel from South Leigh Creek that can convey flow to the site, which appears feasible from the aerial photograph. This potential flow split from South Leigh Creek to Spring Creek must either be analyzed or well justified as not a factor in order to ignore it. Also, there must be discussion regarding the "division line" between the two streams as the flow approaches 200 West (see Comment #5 above). **Addressed.**
9. **Report Page 3 Last Paragraph** The backwater distance is said to be approximately 120 feet, but page D-2 shows it to be nearly 600 feet. **Addressed.**
10. **Report Page 5 Item #3** Revise to a FEMA method accepted flow rate. **Addressed.**
11. **Report Page 5 Item #5** This paragraph, as those discussed in Comment 3 above, must be removed. It is not based on analysis. **Addressed.**
12. **Pages A-1 and E-0** Show all cross sections and in the correct location on pages A-1 and E-0, and the HEC-RAS model distances between cross sections must match and be consistent. For example, E-0 shows section 1.90 upstream of the highway, but the model and page A-1 do not have a section 1.90, but rather 1.91, and on page A-1 it is south of the highway. Everything must be consistent and accurate. Also, either make the HEC-RAS elevations consistent with the contour map, or provided a note in the model and on the A-1 map what the vertical elevation datum conversion is (presumably 6000 feet). **Addressed.**
13. **Page A-1 House Site 1** is said to have a ground elevation of 6101. However, there is no contour showing that or spot elevations indicating that the house site is at that elevation. Perhaps the 6101 contour is covered up by the thick floodplain delineation line, but if such is the case, somehow there needs to be a note or graphics that clarifies this condition. **Not addressed, but if left in the floodplain as discussed in the report, this is no longer an issue.**
14. **Lateral Component of Flow** The HEC-RAS cross section results show the center of flow volume crossing 200 West to be approximately 600 feet south of the bridge and not through the bridge. If this is correct, as well as other cross section results, there is a substantial shift in the cross sectional flow to





the south between section 1.78 and 200 West. This can be accounted for in a 2 dimensional model, but HEC-RAS is not a 2 dimensional modeling program. In HEC-RAS, this condition can be modeled two ways. One is to curve the cross sections perpendicular to the flow direction, which flow would be south-southwest downstream of section 1.75, and then parallel to the road at the road, with distances between sections for the left overbank as appropriate (see last sentence of black text Comment #6). Another approach is to leave the cross sections as they are (simplest for you) but to enter the distance to downstream cross sections for the left overbank as the distance following the centroid of left overbank flow; that is, draw a line representing the centroid of left overbank flow from Section 1.78 (starting north of the house site) all the way to the location of 200 West road crossing 600 feet south of the bridge, and follow that flow path line when entering the distances to the next downstream cross section. This would be your easiest solution, and although it also is the least accurate, it should suffice for what we are doing here. This approach will allow for headlosses from flow going in the lateral direction to the south. The ineffective flow areas are small and, for this project, I'll allow them to be ignored. The response to this comment suggests that the comment may have not been fully understood or the model run that was submitted to us is for scenario #2 instead of scenario #3 spoken of in the AW response to WEI comments. Either way, we make the following comments. The left overbank centroid flow path shown on the page A-1 map should start not from the center of the channel but rather from the centroid of the left overbank flow (viewed looking downstream). It should end up at the centroid of left overbank flow at 200 West at approximately 600 feet south of the bridge (it is shown to be just over 500 feet south of the bridge). The reach length downstream of each section to the next section should, for the left overbank, be the distance along that centroid flow path. For example, the current model reach length downstream of Section 1.78 is 250 feet for the right and left overbanks and also for the channel. Per the currently drawn map page A-1, the right overbank should be approximately 153 feet following the overland flood flow direction from section 1.78 to section 1.75, the channel reach length following the creek meander from 1.78 to 1.75 is approximately 300 feet, and the left overbank following the centroid flow path that is veering off towards 600 feet south of the bridge is approximately 260 feet. The reach lengths between sections should all be checked and revised as per this discussion.

15. **Island within Floodplain** There can be small islands in floodplains, but FEMA is not quick to allow for them. Inaccuracies in modeling hydrology and hydraulics, unmodeled conditional changes such as a fallen tree blockage at the bridge or near the "island," and reduced capacity or erosive forces that could change things, are considerations. For example, per the narrative and page A-1 (but see Comment #13 above), house site 1 is on an approximately sized 200 foot x 150 foot "mound" that is stated to be 6 inches above the floodplain (with current results), and therefore is mapped to be out of the floodplain. But a house with only the ground immediately around it being out of the floodplain, with all around that being in the floodplain, is usually mapped as the whole house site being in the floodplain. In other words, islands only a little bigger than the house perimeter are not typically considered by FEMA as being out of the floodplain. And as currently shown, house site 1 building envelope touches or nearly touches the proposed floodplain limit at 3 corners. All things considered, this would be a hard sell to FEMA to say that it is out of the floodplain under the conditions shown, and although we do not have to send this to FEMA, we must have a defensible position according to their policy. If this were mapped as being in the floodplain, it could still be allowed a building permit, and everything else would be the same except that if in the floodplain, government backed lenders





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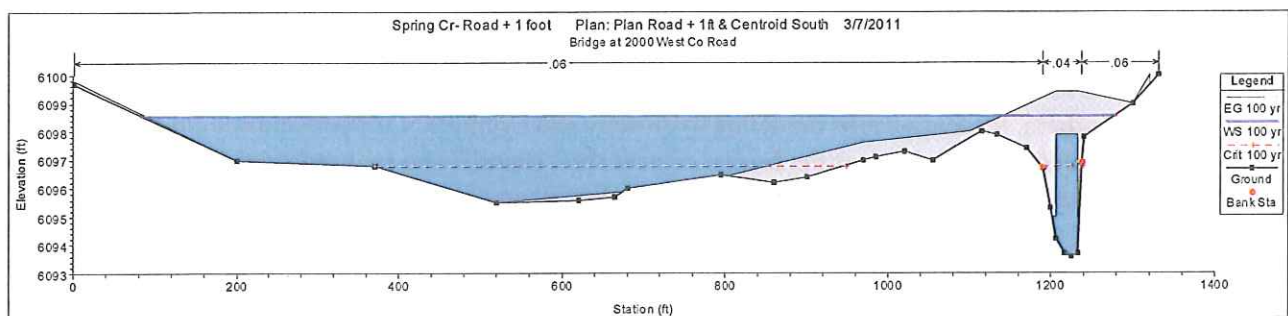
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approximately 3 feet at the old channel crossing). Most agency floodplain and/or stormwater criteria prohibit 100 year flood depths in excess of 1.0 foot depth on dwelling access roads so that emergency vehicles can have ingress and egress at the time of a flood. The County floodplain ordinance does not have this requirement, and I am not aware of the development code having it either. However, this condition should be disclosed to emergency services (fire, police, and ambulance), and their concerns addressed. Furthermore, the County Commissioners themselves may, using their discretion for overall safety concerns, require better flood stage access. If the access road were built up to be within 1.0 foot of the 100 year flood level, then it would provide the normally permitted access, but this blockage of flow from going to the south where the majority of flow crosses 200 West would have to be analyzed as part of the model when determining flood depths. As this needs to represent blockage of flow going south, it cannot be represented as a single road width parallel to river flow in respective cross sections. Feel free to call and discuss ways to do this. Given the slow flow velocities and widths available, the conveyance restriction could likely be shown to not present much of a problem.

We recommend that the applicant seek comment from responsible parties mentioned above regarding the depth of flow over the access road before revising and resubmitting the model, because if raising the access road is required, it will need to be a part of the HEC-RAS model submitted.

Again, I think there was a little misunderstanding on this one. The approach recommended is to not have the 100 year flood depth be greater than 1 foot over the access road, but ALSO that the road IS LOWER (preferably 1 foot lower) than the flood depth to allow flow to migrate south to cross over 200 West at its historic overflow location, as shown in the HEC-RAS output detail below, which is a cross section at the road looking west, the blue being the water cross section area, the bridge being on the right side (explanation is for non-HEC-RAS reviewers of these comments). A roadside borrow ditch or swale as mentioned in the last sentence on page 4 of the report will not be adequate to convey all the water that needs to migrate south.



As presented with the access road above the base flood elevation (BFE), sufficient water cannot go south without a breach, and flows will back up much higher than modeled. Furthermore, the access road ABOVE the BFE creates a flow barrier that cannot be accepted because it would result in much greater than historic flow passing through the bridge and onto downstream property, with much more erosive and potentially damaging flows, adversely affecting those properties downstream of the bridge. There needs to be allowance for flows to migrate south as under current conditions. With southward flow migration, and this is talked about in the red text above, the onsite flows will behave more as





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must require flood insurance (but who at this location would not want insurance anyway?).

I have discussed this issue with FEMA, and there is sufficient reason and precedent to disallow an island of this size under these conditions to be mapped out of the floodplain. I also discussed with FEMA and Teton County P&Z staff an alternate approach, which is that IF, after all model corrections are made and the house site 1 ground surface is accurately displayed, it is determined that this island out of the floodplain actually exists, which appears probable given the information submitted, then it could be considered out of the floodplain. However, to properly disclose and protect against real risks, through the subdivision process there should be two requirements imposed. First, there should be an erosion control plan that preserves the "island" being out of the floodplain. Per the current HEC-RAS model, flow velocities are low in this overbank area, so protection would be simple to provide. For example, any landscaping using hardscape or good coverage vegetation, be it sod, prairie, or pasture grass, or vegetative ground cover, should be sufficient. If the erosion control plan provided for a 20 foot wide erosion control band around the house, this would be acceptable. Secondly, the low finish floor should still be a minimum of 1.0 foot above the established 100 year water surface or base flood elevation. These are fairly simple conditions to conform to. However, if these conditions are not acceptable to the developer, then we suggest running the whole process formally through FEMA and obtain approval that the house site is, with detailed analysis, out the floodplain. The report indicates that the area will be considered in the floodplain. However, this report will not be sent to FEMA for remapping, and the current mapping shows it to be out of the floodplain. Therefore, the floodplain concerns and solutions, as was presented in the report and above, must be addressed through the development process. The report page 6 "master plan" note and page 7 #2 refers to having fill. But it needs to be clear that fill cannot be added in the floodplain area, and therefore must be restricted to the area above the BFE. Furthermore, this only partially addresses one of the two conditions we noted above. We still request an erosion control plan, which as noted can be as simple as stating that a 20 foot wide erosion control band be provided around the house using hardscaping or softscaping with good coverage vegetation. Also, fill is not so much the issue as the elevation of the low finish floor. Notes regarding both the erosion control and the low finish flow being a minimum of 1.0 foot above the established 100 year water surface or base flood elevation should be provided on the Master Plan, and subdivision, building permit, and certificate of occupancy approvals contingent upon these conditions being addressed. Notes on the Master Plan could be as follows:

1. An erosion control plan for House Site #1 is provided as part of the subdivision approval process, will be reviewed at the building permit stage, and must be implemented and maintained prior to issuing a certificate of occupancy. It shall consist of hardscaping and/or good coverage vegetative softscaping for a distance of 20 feet from the dwelling.
2. The House Site #1 low finish flow shall be a minimum of 1.0 foot above the estimated base flood elevation (100 year or 1% annual chance flood). Either crawl space or fill may be used to raise the floor level, but fill shall not be used outside of the building envelope.

16. **Access Depth** With the current model results, the 100 year flow depth over the access road to both house sites is 1.5 to 2.5 foot deep, and approximately 3.5 feet plus crossing an old channel to house site 2 (in the 5 year event, flow depths over the access road are still up to 1 foot deep and





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modeled and flood levels will be acceptable on the site as well. This could all be analyzed in the HEC-RAS model, but for simplification I made allowance for not doing so, which I will here explain. First, we require that the access road is exactly 1 foot below the 100 year water surface elevation, Weir overflow for a broad crested weir 15' wide or wider at that flow depth is  $2.63LH^{1.5}$ , where of course the height H or flow depth is 1.0 foot, which reduces to weir overflow to equal 2.63 times the weir length. There is 1580 cfs, of which  $1580 - 127 = 1453$  cfs must migrate south over the access road weir. Some will go through a culvert in the old historic channel, but ignoring that to be conservative or to account for potential blockage, the weir length must be  $1453 / 2.63 = 552$  feet. We have approximately 810 of road length in the floodplain, but approximately 150 feet is backed by the higher ground where there will be no flow. There is still adequate length of access road for weir flow to transfer 1453 cfs to the south. This is an approximate approach, of course, but with extra weir length it should be sufficient for our purposes.

What does this mean for the HEC-RAS model? Nothing, it means it can be left as is with respect to the access road issue, but the design and construction of the access road is what must change. There should be a third note on the Master Plan something as follows:

3. The access road to house sites within the floodplain shall be constructed and maintained to 1.0 foot below the estimated base flood elevation (100 year or 1% annual chance flood).

An alternative to the lower access road and the note above would be to have sufficient culverts to pass 1453 cfs to the south, analyzed either in HEC-RAS or using proper culvert analysis methods of calculating inlet and outlet control.

17. **Report Corrections** On page 4, the bridge was said to have 165 cfs capacity. The model sent to us showed 127 cfs. These need to be consistent. On page 7 #2 it is said that 13 acres of the 18 acre parcel are out of the floodplain. This must be a typo or referring to the FEMA FIRM, because it is not what is represented with the map A-1. Being conclusions of the report is should be presenting the conclusions of the report study, not the FEMA FIRM. Page 6 and 7 statements regarding Masterplan notes and fill should be consistent with each other and our comments above.



REF: HERITAGE PEAKS SUBDIVISION

TETON COUNTY  
PLANNING & ZONING

APR 15 2011

RECEIVED

RESPONSES TO:

- A) PLANNING & ZONING STAFF REPORT
- B) ANGIE RUTHERFORD E-MAIL COMMENTS OF 04/08/2011
- C) JAY MAZALEWSKI E-MAIL COMMENTS OF 4/11/2011

A) STAFF REPORT:

1. Engineered drain fields required:

- ✓ a) Included in Section 9 I of Covenants, conditions and requirements
- ✓ b) Statement on the Master Plan

2. Floodplain mapping refinement:

- ✓ a) e-mail of approval from Williams Engineering dated March 21, 2011.

3. NP study: See D.E.Q. letter of July 16, 2010

4. Lou Simonet's recommendations from October 29, 2010 for the Development Agreement have all been included or addressed. In regards to Item d, this item can be finalized after the project receives the final approval of the county commissioners so accurate dates can be inserted both in the Development Agreement and the surety.

5. Item 1 of recommended conditions of approval:

- ✓ See Item 1. above

Item 2, items a-e of "

See Sections 8, 9 K ii and 18 of the covenants, conditions and restrictions.

Item 2 f - see Master Plan and Item 9 D of the cc&r's.

Item 2 g - see Master Plan and Item 9 F of the cc&r's.

Item 2 h - can bear proof containers be legally required when this subdivision does not lie within the newly adopted "Bear Proof Container zone" of Teton County? How can the county require something that contradicts its own zone?

6. Item 3 - Approved by Gerald Williams on March 21, 2011. See Item 2 above.

7. Item 3 - Lou Simonet's letter of October 29, 2010.

- a. i. There is no subdivision road for dedication. Plat has been revised so both Lots 1 & 2 access from County Road "2000 West" with a common access.



- ii. See Owner's Certificate for county road r-o-w dedication to county.
- iii. Part of private road easement; there is no dedication.
- iv. Open space is part of Lot 1; there is no dedication to anyone. See Open Space Management Plan.
- v. These will be dedicated to the Heritage Peaks Homeowners' Association.

Item b. i.

Drainfields are located on the final plat and the master plan. They were also on the preliminary plat that Mr. Simonet reviewed.

ii. Building envelopes are on the final plat and the master plan. They were also on the preliminary plat that Mr. Simonet reviewed.

iii. See final plat, Sheet I and Master Plan.

Item c. Well head elevations are on the Master Plan.

Item d. This is platted as an easement and dedicated in the Owners' Certificate to the Heritage Peaks Homeowners' Association.

Item e. Addressed.

Item f. Subdivision

Item 4 a-h of Lou Simonet letter: see revised improvement plans.

Item 4 c of Staff Review which is also Item 5 of Lou Simonet letter:

Items a- c: corresponding sections have been revised.

Item 5 f - letter from Fire Dept. was submitted as part of Final Plat Application. It is being included again with this revised packet.

Item 5 of Staff Review: See Section 9 A. of the cc&r's.

#### B) ANGIE RUTHERFORD'S COMMENTS OF 04/08/011

1. See above items for responses to Recommended Conditions of Approval from pg. 11 of Staff Report.
2. Open Space Management Plan is part of Development Agreement as directed by Planning & Zoning, but is also included as part of the cc&r's since the Development Agreement will expire, but the cc&r's won't.
3. No further lot splits - Section 19 of the cc&r's.
4. Right to Farm Act - Section 16 of the cc&r's.
5. Setbacks - Section 10 C iii of the cc&r's.
6. Water & sewer - Section 10 H and Section 10 I

#### C) JAY MAZAKEWSKI COMMENTS AS OF 04/11/011

3-a-v - See final plat, Sheet 1; final plat Sheet 2 for dedication and Master Plan.



- 3-b-iii - See 3-a-v response.
- 3-d - See Owners' Certificate, Sheet 2 of final plat.
- 3-e -.Legend linetypes have been corrected.
- 4-b - Added to Sheet 5 of improvement plans.
- 4-e - Inspection requirements are on Sheet 1 of improvement plans; driveway portion is on Sheets 2 and 5 of the improvement plans.
- 4-g - See sheet 5 of improvement plans.
- 5-d See enclosed explanation,
- 5-f Letter from Fire Marshal is enclosed. It was also submitted with the Preliminary Plat application and the final plat application.

***A-W ENGINEERING***  
***255 South Main St.***  
***Victor, ID 83455***

***208-787-2952***

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*AW Engineering*

Box 139, Victor, Idaho 83455

Phone 208-787-2952 Fax 208-787-2957

April 6, 2011

## Exhibit "A"

### ENGINEER'S FINAL COST ESTIMATE HERITAGE PEAKS SUBDIVISION

Section 34, Township 6 N, Range 45 E. B. M., Teton County, Idaho

	DESCRIPTION	COST/UNIT	UNITS	COST
1	Electric power service Installed 2008	\$10.00/l.f.	0.	0
2	Telephone service Installed 2008	\$3.00/l.f.	0	0
3	Road - private road to be rebuilt to a 24 foot wide base gravel road when first house is built.	\$ 15.00	None for bonding	0
4	Entrance & Road Sign	\$ 400.00	1 sign	\$ 400.00
5	Landscaping at Entrance	\$ 200.00	1 area	\$ 200.00
6	Mail Boxes ( 2 Private Boxes )	None	0	0
7	Fire System for Project ( 2 Lot Subdivision )	None	0	0
			Totals	\$ 600.00

Planning & Zoning Bonding 125 % X Above \$ = \$ 750.00

This plan and proposal does not include central water, sewer system or fire protection system and it is not expected to be required by Teton County.

The road plan is to build the private Lane road at the time that the 1 st house is built.

This road will be rebuilt at location and grade of existing road with a 24 foot base gravel to Fire Department standards and surfacing gravel ( crushed gravel ) as the owners wants.

The first 30 feet at the approach to the county road will be constructed with a 10 foot wide swale drainage across the road at 6" deep to carry water across the road during runoff and to satisfy the county road and bridge to not have to install a culvert at the approach. A small culvert would not do any good because flooding amounts and the slope of land would require a large culvert to do any good.

Arnold Woolstenhulme







WK: 208-354-0245  
CELL: 208-313-0245

**Teton County Engineer  
MEMO**

150 Courthouse Dr.  
Driggs, Idaho 83422

October 29, 2010

Updated June 9, 2011-Comments in RED

TO: Teton County Planning and Zoning Commissioners  
FROM: Louis Simonet (original comments), Jay T. Mazalewski (comments in RED)  
SUBJECT: Heritage Peaks Subdivision Comments

The following are my comments for the Teton County Planning and Zoning Commission meeting to be held on November 9, 2010. These items should be addressed prior to final application, and these comments should be carried over automatically as final comments.

1. .... This comment pertains to the drain fields for the septic systems.
  - a... Because of the following:
    - i. With the amount of possible locations for temporary surface water features.
    - ii. With the possibility of having the drain field change in size and type after the public improvements have been completed and the ownership of the lots have changed hands.
    - iii. With the possibility of the design of the drain field determining the size, or number of bedrooms, of a house.
  - b. . It is recommended that something be done to verify that the next owner of the property know in advance that there MAY be an impact to the design of their home due to public health standards. Therefore, can one of the following be completed:
    - i. Can the Engineer of Record (EOR) for the subdivision certify as to the type and size of the drain field, and pre-design this system so that there are known parameters as to these drain field systems and the impacts that it would have on the lot.
    - ii. Can a note be stated on the master plan what the possible impacts of the temporary surface water features would have on the drain field.
    - iii. Can the EOR for the subdivision certify that all site suitability criteria, contained in the Technical Guidance Manual for Individual Sewage Disposal Systems, be met by the proposed location and size of the drain fields. If so can this be stated on the Master Plan, and the size, type and location of the drain fields should be clearly shown on the Plan.
  - c... This question is brought forward for both discussion and review. I feel that it would be to the benefit of the developer to pre-discuss this with myself, the county planner, and EPHID. Please feel free to contact me about this at any time. I am not fixed on only one answer and would love to hear any other possible solutions.

Addressed



2. .... This comment pertains to the concerns of the flood plain line that is shown on the preliminary plat.
- a... Please verify that FEMA Map 160581C0094C is the correct map.
  - b. . I have a concern as to where the Flood Plain is located. Can the EOR do one of the following:
    - i. Certify that the building envelopes and public works are not going to be impacted by the flood plain.
    - ii. Complete a study verifying where the flood plain is located.
    - iii. Require specific FEMA approved construction of the residences where they would be impacted by the flood plain.
    - iv. Provide some other certification/notice that alerts the property owner of the possible impact of the Flood Plain.

Addressed

3. Preliminary Plat:

- a. Please show what the dedications are:
  - i. Is the road dedicated to the HOA? Heritage Drive should be dedicated to a single entity so that they can have control over the road. If there needs to be additional easements dedicated to the utilities, please do so.  
Addressed-no access road required, only a shared driveway.
  - ii. Is the 30' County Road ROW dedicated to the county. It appears that the property line goes to the center line of the county road. This 30' section should be a separate parcel dedicated to the county.  
Addressed-no access road required, only a shared driveway.
  - iii. Is the turn around area dedicated to anyone. This should be part of the road or at least shown as an easement that is dedicated to someone. Preferably, it is part of the road property.  
Addressed-no access road/turnaround required, this should be reviewed when building permits are applied for.
  - iv. Who is the open space dedicated to. Who is responsible to maintain it.  
Addressed
  - v. Who are the head gates and irrigation ditches dedicated to. They should be dedicated to the proper owners and access to them should be granted to the owners for maintenance.  
Addressed
- b. Please locate all aspects of the plat.
  - i. Please locate the drain fields. Since these will probably be shown on the Master Plan and not on the Plat at the final application, then these should be located on the master plan. See comment #1.  
Addressed
  - ii. Please locate the building envelopes. If the building envelopes are shown on the Plat they should also be shown on the Plan. See comment #2.  
Addressed



iii. Please locate the easements for the irrigation ditches and access to them.

Addressed

c. Please state somewhere on the Plan the requirements for well head elevations versus the water elevation. It appears that the well will be drilled in wetlands and possibly next to a creek/ditch in which case this difference in elevation requirement for a well should be noted on the Plan. (Is should not be noted on the plat since this is not a survey item.)

Addressed

d. On the road plans there is a 20'x30' landscape and mailbox area that is not shown on the plat or the plan. Please show on the plat and dedicate to the correct person/entity. Please show on the plan.

Addressed

e. Legend, Please verify all labels and line types.

Addressed

f. Is this a PUD or a Subdivision. All documents should state it correctly.

Addressed

4. Improvement Plans (Road Plans): Sheet 1 and 2:

a. Please provide a design for the road signs and the subdivision entrance sign.

Addressed

b. Please provide a design for the turn around. Including width, length and a plan view and cross section.

Addressed

c. Please provide a design for the mailbox and landscape easement.

Addressed

d. Road Profile View: Please show that the structural backfill will provide drainage as shown on the county standards. Typical road section shall show the bottom of the sub base the full width of both lanes and the shoulders and shall continue until it intersects the 4:1 slope. Compacted native material shall NOT be used for that portion of the 4:1 slope above the bottom of the sub-grade.

Not applicable as the access road is a now a shared driveway.

e... Please state (on the plans) the inspection requirements per the Teton County standards.

Addressed

f... Please state (on the plans) the standards used:

i. Road standards:

ii. Well Standards

iii. Erosion control standards

iv. Septic standards

v. Fire standards

vi. Water standards

vii. Sewer standards

Addressed

g. . Please provide a design and the sizing calculations for the culvert at the end of the road. This should include details for construction.

Addressed



h. . Please label the improvement plans as such to match the development agreement.

Addressed

5. .... Development Agreement.

a... Section 16, As constructed plans shall be turned over to the Planning office.

Addressed

b. . Section 3, Signs: the signs shall be retro-reflective, unless it is deemed that the subdivision sign is to be not-reflective.

Addressed

c... Section 6, Building permits: Can a note stating that no CO can be obtained until the improvements have been completed, be recorded on the Plan in order to notify future property owners.

Addressed

d. . It may be advantageous to both the county and the developer to have the surety end a couple of months after the development agreement expires. That way, the developer can complete the construction of the public improvements by a specific date, and then the county can do the final inspections and project close out. This is just a recommendation for discussion.

Addressed, the applicant's surety will end once the development agreement expires.

e... Section 15: final inspection request by the contractor should be in writing or by electronic mail. This request and all correspondence should be through the Planning office.

Addressed

f... Section 2 states that there is to be fire protection installed. Please have the Fire Dist. verify, in writing, that no fire protection is needed for this subdivision.

Addressed

6. .... Please place a note on the Master Plan that states what was stated on comment #3 in the letter received by Eastern Idaho Public Health District. The note should state "Any construction involving identified wetlands (including transfer lines crossing wetlands) will require prior approval from the US Army Corps of Engineers."

Addressed

7. .... Please verify that no wetland permits are required prior to starting the public improvements. If there are permits required please state who is responsible to obtain them.

Addressed

If there are any questions please call or email.

Thanks,

Jay T. Mazalewski